

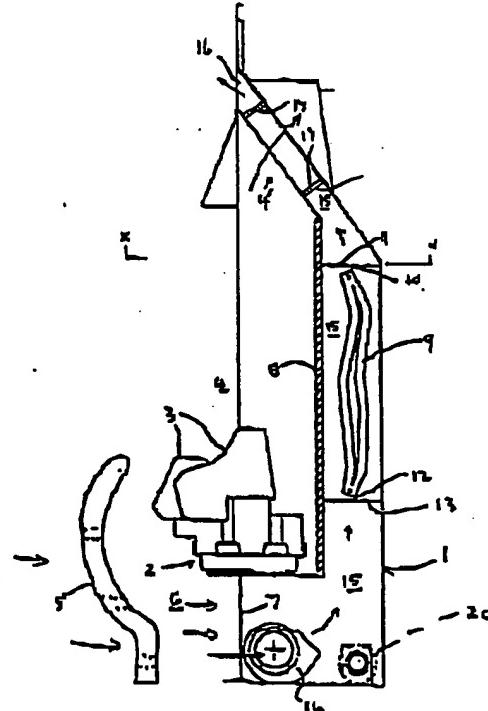
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(54) Abstract Title  
Gas fired heating appliance with a simulated flame effect

(57) A gas fired heating appliance 1 is provided with at least one gas burner and means for creating a simulated flame or visual effect illuminated by an electric light source 20, to the rear or side of a combustion region of refractory elements such as artificial fuel 3. A heat resistant screen 8 of translucent or transparent material which may be marked, patterned or coloured and made of ceramic glass is disposed between the effect and combustion region. A ribbon or slit type device 9 to give the impression of flames on the screen 8 maybe disposed in an air flow from a blower 14 used to cool the screen. Alternatively a fabric tube, fibra optic, holographic, plasma discharge tube or immiscible oil device may be used. A ceramic sheet (22, Fig 6) maybe placed between the screen 8 and fuel elements 3 with apertures (22', Fig 6) for light to create a glow effect when the fire is turned off. A second screen heat resistant screen (18, Fig 4) made of bora silica glass may be provided parallel to the rear of the first screen 8 creating an air space (19, Fig 3). A blower 14 passes cool through this space (18, Fig 3), over a heat exchanger (17, Fig 3) and into the room (16, Fig 3) to provide additional heating. A combined illumination device 20 and gas ignition controls maybe provided to reduce illumination for a high gas flame or increased when the effect is operated alone. A further screen may be provided to close the combustion area.



**Fig. 1**

GB 2350420 A

**At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.**

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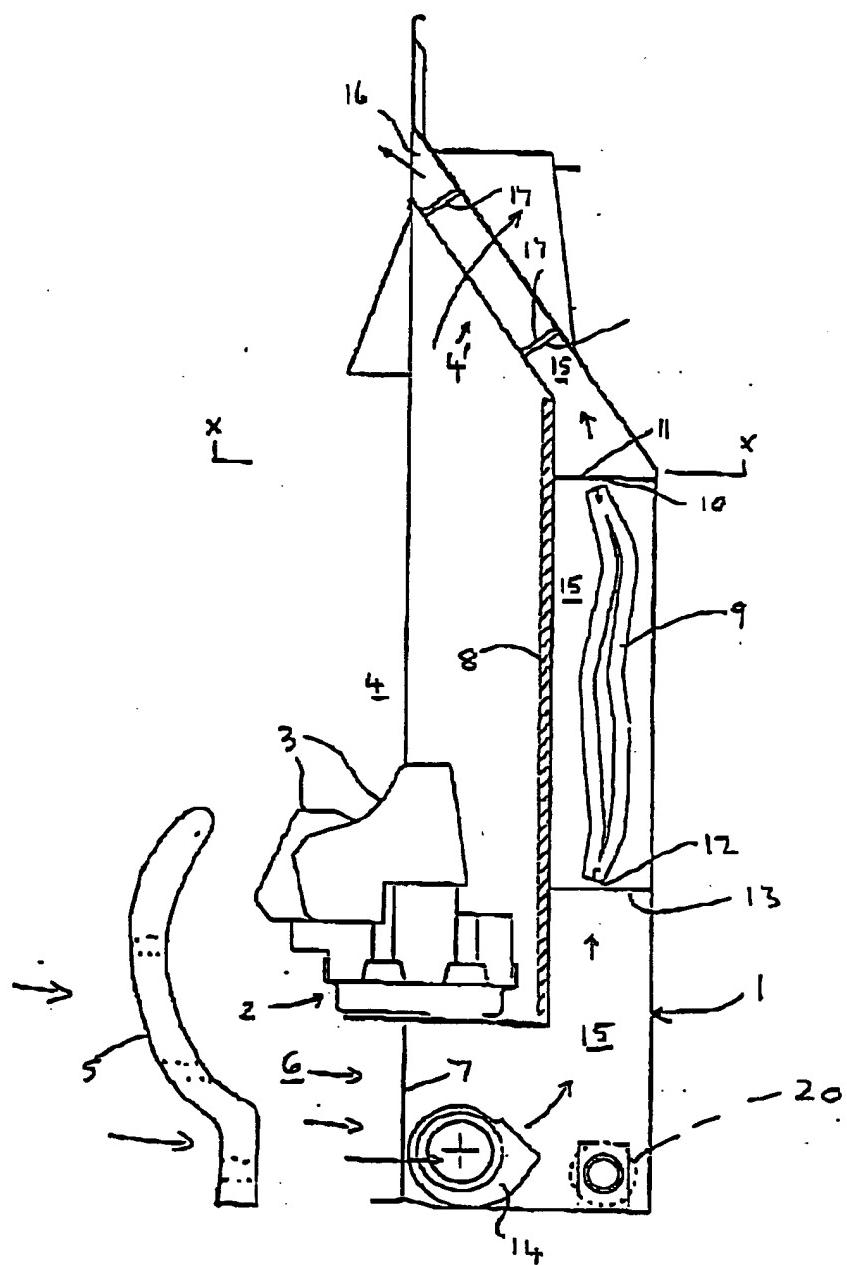
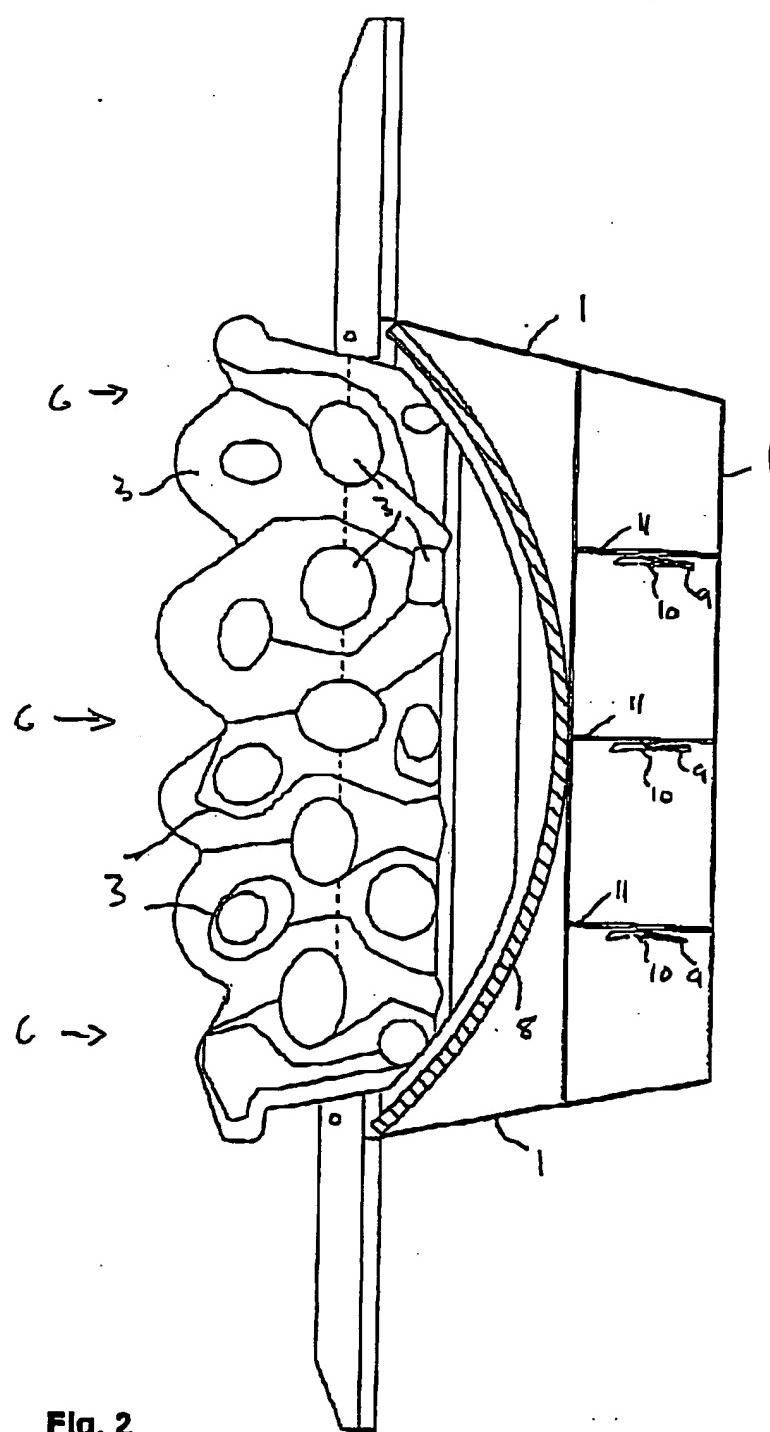


Fig. 1

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**Fig. 2**

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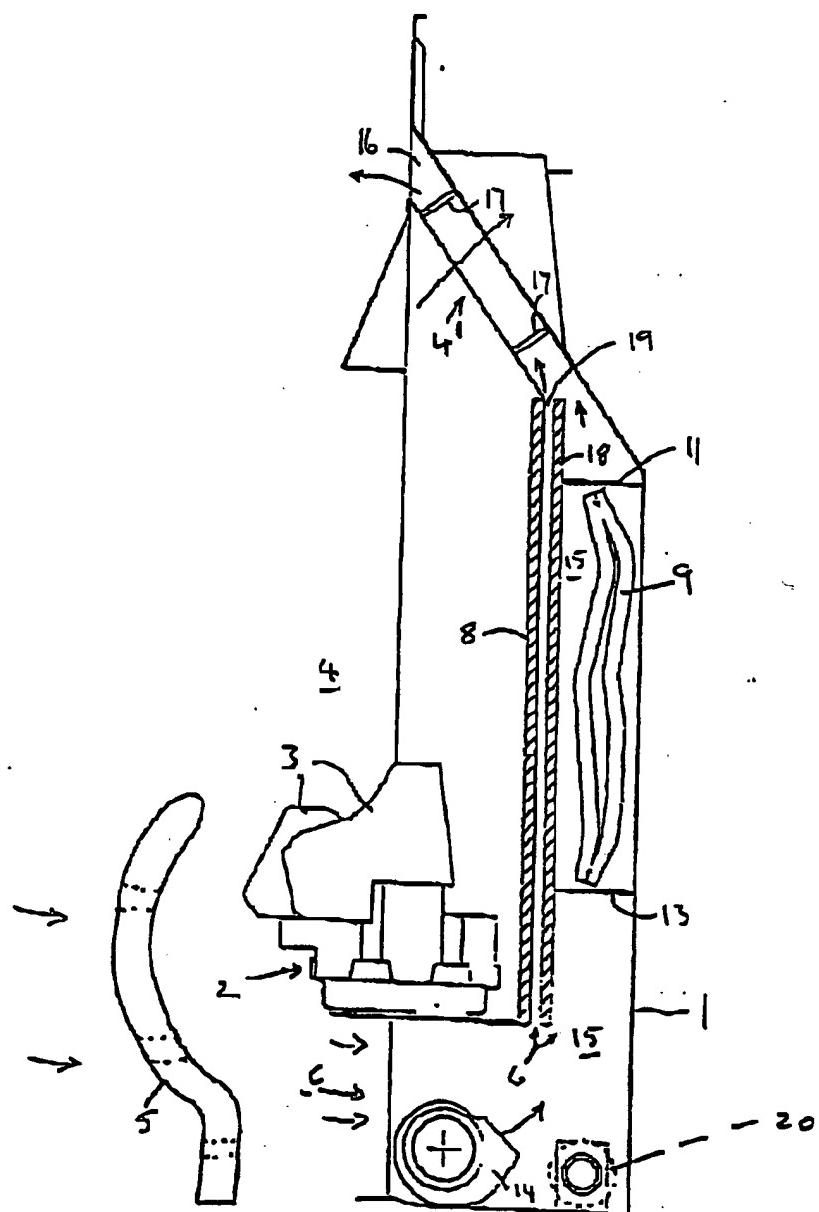


Fig. 3

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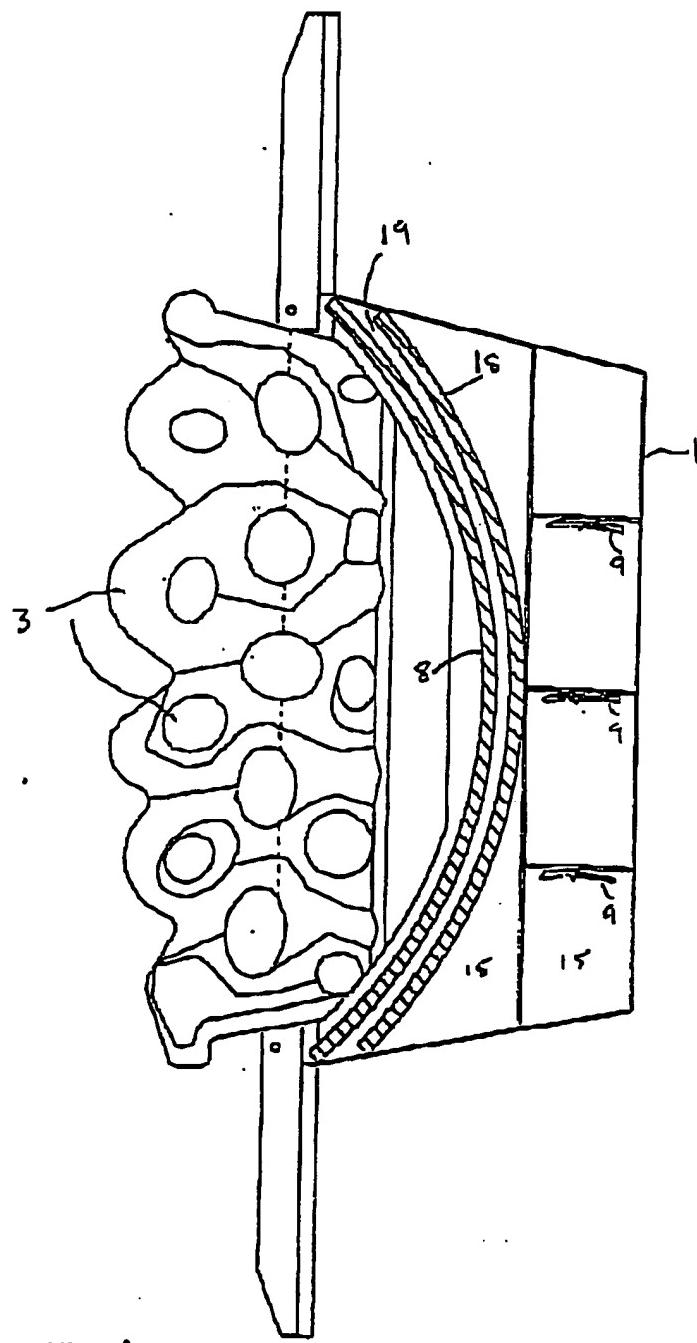


Fig. 4

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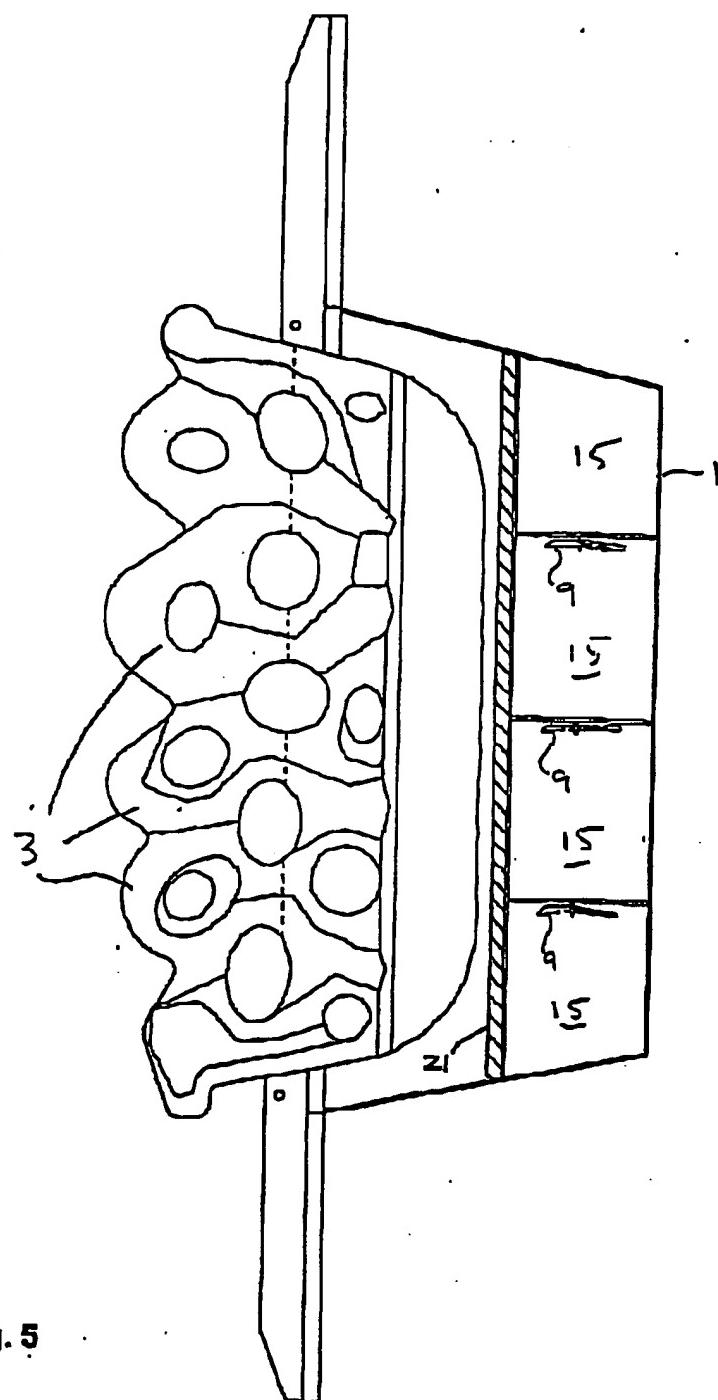


Fig. 5

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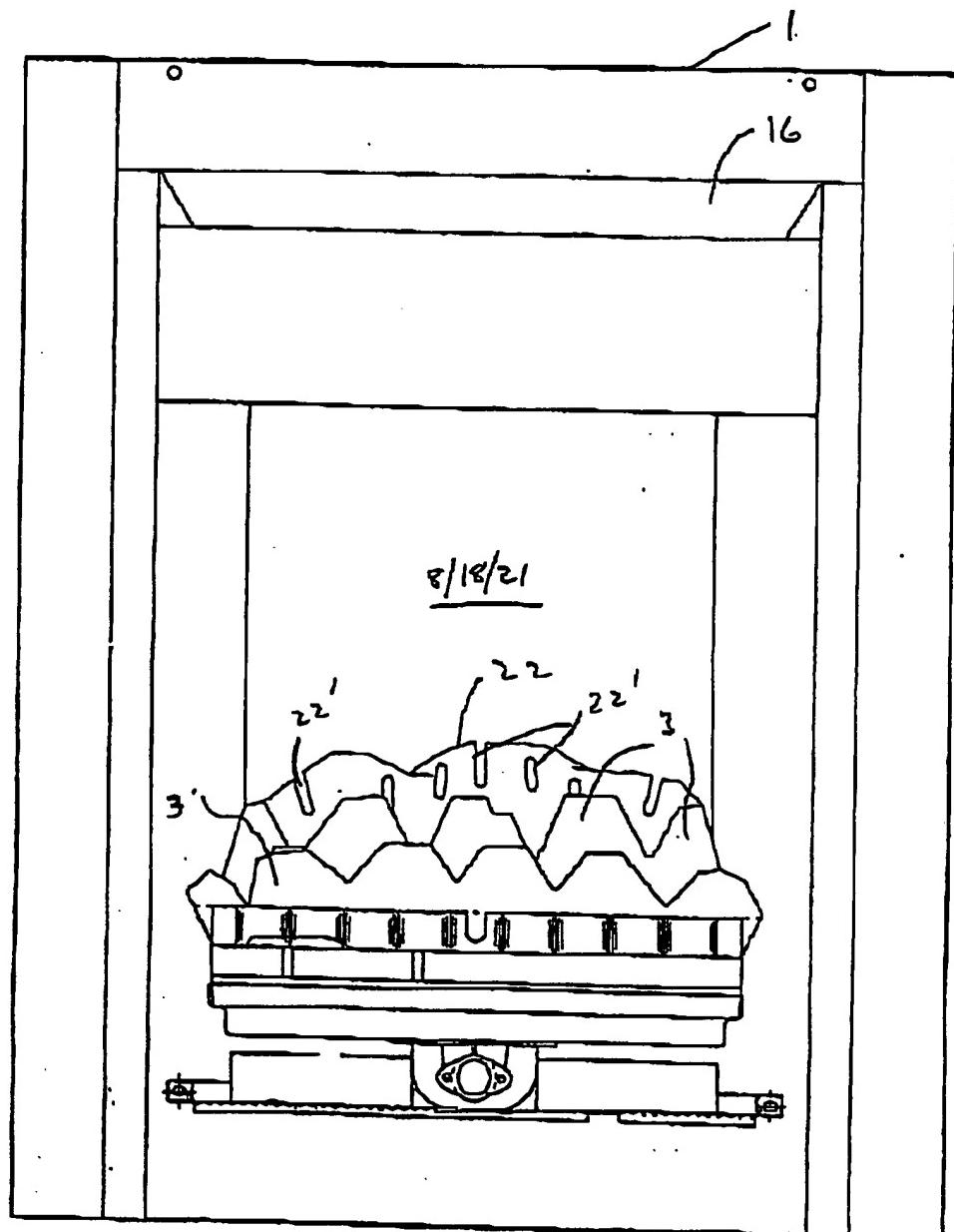


Fig. 6

**2350420**

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## GAS-FIRED HEATING APPLIANCE

The present invention relates to a gas-fired appliance and particularly to a gas fire with heatable coal effect or log effect which will subsequently be referred to as simulated fuel elements and which are heated to a temperature at which they glow, at least in a lower region, by a gas burner possibly via the intermediary of a radiant block.

It is known for some gas fires to have been provided with additional gas burner means to promote gas flame formation for aesthetic effect. However, such fires have certain deficiencies including that they are not efficient and control of the additional flames can prove difficult and such flames may not combust efficiently and may produce soot.

It has now been appreciated by the inventor that when known gas fires are turned low so as to simply produce a "glow" effect without any significant flames, such fires are not as attractive - even though they may be more efficient or as desired by the user at such setting. Furthermore, when such gas fires are turned off, the fires do not look as attractive as when lit. Also, in gas-fire showrooms the number of flues is limited and hence only a limited number of fires can be lit - quite apart from any considerations of the environment.

In GB 2 152 655 of Baxi Partnership Ltd., the gas burner is apertured to permit the passage of electric light therethrough to give only a "glow" effect amongst the simulated coals but the combustion chamber wall at the back of the combustion chamber will provide a dark unattractive appearance and no flame-effect is produced.

Purely electrically powered fires have had simulated flame-effect means possibly behind a non heat-resistant glass screen and in front of which a non-refractory, simulated fuel-effect moulded sheet of, for example,

glass reinforced plastics material has been provided lit from below by an electric light source but never has such an arrangement been contemplated for a gas fire since known gas fires always have their own real flames and no need has been contemplated.

According to the invention a gas fire having a combustion chamber or region with heatable refractory radiant elements is provided with simulated flame-effect means or other visual effect means rearwardly and/or at the sides of the combustion chamber or region and viewable from the front of the fire; said flame-effect or other visual effect means having or being illuminatable by an electrically energisable light source.

The simulated flame-effect or other means may be heat resistant itself and/or a heat resistant glass screen may be provided interposed between the combustion chamber and the simulated flame-effect or other means and/or cooling means such as a flow of cool air may be provided.

Also according to the present invention an improved gas-fired appliance, such as a gas fire, comprises a gas burner, simulated fuel means or other radiant elements heatable by the burning gas of said gas burner to produce a "glowing" effect, light-emitting simulated flame-effect means or other light-emitting visual effect means located at least rearwardly of the simulated fuel or other means, and at least one upwardly extending transparent and/or translucent screen or panel of heat resistant material located between the heatable simulated fuel means or other radiant elements and the simulated flame-effect means or other visual effect means.

Preferably, the heat resistant screen is glass, such as ceramic or even bora silica glass if not subjected to too high temperatures, and is such so as to be able to withstand the temperature of the gas flames of the burner and the heat of the glowing-simulated fuel means. The screen may be partially or completely coloured and/or patterned or marked to enhance the visual effects.

The heat resistant screen in addition to enabling the effect of the simulated flame-effect means to be viewed from the front of the appliance also acts to thermally insulate the flame-effect means and/or surface on which it displays from the heat of the gas burner. For additional heat insulation or cooling effect and/or to improve the efficiency of the fire, however, the rear surface of the screen may have its surface cooled by an air flow thereover produced by a fan or blower means which will be electrically powered and said fan may also operate to activate the simulated flame-effect means - such as fluttering ribbon fabric type devices such as of silk or polyester fabric material. Also, an additional thermally insulating sheet such as a ceramic insulating sheet, may be interposed in a lower region of said glass screen adjacent the glowing simulated fuel as necessary, and said ceramic sheet may have suitable apertures such as slits to enable light to pass therethrough and into the region of the simulating fuel-effect means from an electrical light source to provide an attractive "glow" in the region of the simulated fuel means, at least when the gas fire is turned off.

The heat resistant transparent/translucent glass screen may be flat or curved or a combination of such although it is envisaged that at least the sides will be curved to enable light to be also introduced from the sides and the glass screen means may be totally curved in other designs.

To provide additional thermal insulation between the gas burner unit/heatable fuel-effect elements in the combustion region, a second upwardly extending transparent and/or translucent screen may be provided rearwardly of the first heat resistant screen, and preferably is a bora silica glass screen and may be of a different material and which may also be appropriately coloured or patterned or marked to provide an attractive effect and will preferably be spaced from the first front heat resistant sheet so as to provide an air space for cooling effect and is preferably similarly shaped as the first screen and parallelly disposed relative thereto. Preferably said air space will be connected to or communicate with a cool air inlet provided in a

lower region of the appliance and be connected to or communicate with an outlet in an upper region of the appliance and leading to the interior of the room in which the appliance is located. Thus, air may flow through such passage and such air flow will be aided by convection or preferably additional means such as a fan or blower which may also act to produce an air flow which will provide requisite movement in the flame-effect means if such is of a type requiring such. It is envisaged that the exhaust/chimney vent part of the appliance for the outflow of combustion products of the gas fire to a flue or chimney will have heat-exchanger means such that the air in said passage communicating with the space behind the glass screen and/or at least between the two upwardly extending glass screens, will be further heated and this will additionally improve the efficiency of the heat generation of the appliance and also, when provided, the flow of cooling air between the two sheets of the screens to provide for improved heat insulation or cooling of the rear part where the flame-effect means may be located - the insulation normally acting to protect the simulated flame-effect means against heat.

The electrically illuminated simulated flame-effect or other electrically powered light illuminated/illuminating visual effect means may be of any desired kind or type. For example, it may comprise ribbons or slit sheet or other material supported to be moved by air from a fan or blower such as disclosed in GB 2 230 335 of Baxi Engineering to produce the effect of flames when illuminated or lit. Alternatively, it may comprise other known visual-effect means such as a "spinner device" i.e. a rotary wheel with blades horizontally mounted above an electric bulb to be driven by convection currents from the bulb to produce shadows and light on an upper surface or screen to simulate flames and/or smoke etc.

It will be appreciated that the main purpose of the heat resistant screen is to enable an electrically energised lighting device or effect to be provided behind and/or at the side of the gas combustion region and any heated simulated fuel-effect elements therein. Light emitting effects other than flame-

effects may be produced as the visual effect means e.g. a vacuum chamber-electric discharge device ("plasma" lamp type device), a smoke effect device, or differently coloured immiscible oils ("lava oil lamp") may be provided. Still further, alternatively, the visual-effect means may be a fibre-optic lighting device or a hologram-forming device or an upwardly fabric extending tube device and displacing fan to produce fluttering and lit by a lamp, or may be a light projection device. Also suitable reflective surfaces and/or mirrors and colouring may be used to enhance the effects.

Suitable light source or sources are provided as part of or to at least illuminate/light the simulated flame-effect means or other, when provided and, preferably, also to provide a "glow" effect when the appliance is viewed from the front and, preferably, also through the fuel-effect members. It is envisaged that the rear screen or one or both screens may be tinted or reeded or otherwise coloured or marked to improve the aesthetic effect. An additional screen or screens may be provided which may be reflective or mirrored or diffused to produce desired effects . At least the front screen behind the combustion region may be vertically extending or inclined.

The position of the light source, which will preferably be coloured to produce a warm glow, will be such as to illuminate or back light the flame-effect part of the flame-effect means and preferably also parts of the heatable fuel-effect means. Preferably a switch means for the electric power supply to the light source, e.g. a light bulb or lamp and fan, will be included in or combined with the gas fire control means so that the light is automatically switched on when the fire is ignited and switch means may be provided to enable the light to be switched on even if the fire is not required. Also, the switch may be such that the electric light and fan is switched off or reduced when the gas burner is at a higher setting. Thus, the gas appliance control will preferably adjust or balance the level of activity of the flame-effect means or other means with the level of the gas fire heating including height of flames.

It is also envisaged that, to improve the efficiency of the fire, a further glass screen may be located in front of the burner and heatable fuel-effect members to close the front of the combustion region in known manner.

It will be appreciated that the present invention provides the considerable advantage that the gas-fired appliance such as a normal domestic fire when the gas is not lit and burning, can still provide an aesthetic and pleasing effect and that even when the fire is lit, the gas fire part can be turned to a lower, "glow" setting while still providing an attractive simulated flame-effect with pleasant overall appearance whilst still enabling desired control of the fire at low setting to be achieved.

The Invention will be described further, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a schematic cross section of a gas-fire according to a first embodiment of the Invention;

Fig. 2 is a partial cross section along the line X-X and looking down illustrating the simulated coal effect means, a curved upwardly extending transparent/translucent screen and the simulating flame-effect means in the form of fabric ribbons;

Fig. 3 is a schematic cross section of a modified embodiment according to the present invention wherein two upwardly extending screen means are provided;

Fig. 4 is a partial cross section on the line of Y-Y of Fig. 3 and looking down;

Fig. 5 is a partial cross section through an alternative embodiment where only a flat upwardly extending transparent/translucent screen is provided; and

Fig. 6 is a front elevation of a fire according to the invention showing the glass screen

In Figs. 1 and 2 a gas fire is schematically illustrated and includes a casing 1 and a gas burner unit 2 with a plurality of non-burning simulated fuel-effect members 3 of ceramic material which may represent coal or logs but in

the example represent coal. A combustion region 4 is defined by the fire casing 1 etc., and has combustion products outlet 4' leading to a flue (not shown). A front cover or wall member 5 is provided along the bottom and front of the fire and having openings (not shown) for the flow of air 6 to inlet passage 7 extending along the bottom of the fire and beneath the burner and not forming the inlet for the burner 2 which is located thereabove. Rearwardly of the burner unit 2 and fuel simulating members 3, is a vertically extending curved screen 8 of ceramic glass which is normally transparent but which may be made translucent or have other markings or surface treatment to improve the visual effect thereof. Slit-ribbon type flame-effect simulating devices 9 of polyester fabric material are located rearwardly of the screen 8 and suspended by hooks 10 on cross pieces 11 and held at the bottom by hooks 12 on cross pieces 13 and are caused to move i.e. flutter by means of a fan 14 located in the rear cooling air/fluttering air duct 15 which has inlet 7 at its lower end and extends upwardly past the simulating flame-effect means 15 and outwardly at the upper end at outlet 16 into the room. This air duct 15 is equivalent in partial effect to a rear connection duct of a gas fire. Thus the fanned air will take heat from the rear of the glass panel 8 and direct such into the room. The combustion products of the gas fire will exhaust through duct 4' to a flue and chimney outlet (not shown) but will first undergo a heat exchange via aluminium walls 17 separating such from passage 15 to also heat the cooling air 6 before it passes into the room via outlet 16.

Figs. 3 and 4 are a vertical cross section at section on Y-Y of Fig. 3 respectively of an alternative embodiment which only differs from Figs. 1 and 2 in that two curved upwardly extending glass screens 8,18 are provided. The first front screen 8 preferably being of ceramic glass and the second, spaced screen 18, which preferably being of bora silica glass extending glass or other, may be coloured or marked or otherwise surface treated or tinted to produce a desired effect. The primary purpose of the second rearwardly located screen 18 is to provide for additional heat insulation together with some aesthetic effect, as desired, and forms an air space 19 between itself

and the front screen and into which ~~around~~ 19 air 6 enters at the bottom and exits at the top of the space to provide for an additional cooling effect of screen and to protect the simulated flame-effect means 9 from excessive heat but also acts as a heat exchange to improve efficiency.

Illuminating means are provided comprising electric bulb 20 is located at the bottom of the fire to illuminate the flame-effect means 9 and also desirably to illuminate the surrounding walls of the casing including the side regions of the combustion region 4 to produce a desired effect. Advantageously apertures (not shown) may be provided to enable light to emanate from between the fuel-effect material 3 to provide a "glow" effect. Suitable switch control means (not shown) for the blower 14 and bulb 20 are provided so that such are automatically switched on when the gas fire is ignited although switch means will also be provided to enable the user to turn such on even when the fire is not lit.

In Fig. 5 a simplified arrangement is illustrated wherein only a first flat/planar translucent/transparent screen 21 of ceramic glass is provided. If desired, there may be spaced therefrom and rearwardly, a second flat transparent screen (not shown) of bora glass which may be printed and/or tinted.

Additionally, screens such as diffuser screens of, for example, perspex, may be provided as desired behind the glass screen or screens.

Fig. 6 is a schematic front elevation of a gas fire according to the invention wherein the glass screen 8, 18 or 21 is illustrated and in front of which a thermally insulating sheet 22 of thermally insulating material such as ceramic material is located in front of the screen 8, 18, 21 between it and the combustion region and in a lower region to protect the glass screen 8, 18, 21 from the high temperatures occurring. An irregularly shaped upper edge is illustrated and recesses or apertures 22' are provided to permit light from bulb 20 to pass therethrough.

## CLAIMS

1. A gas/electric flame-effect heating appliance including one or more gas burners, a combustion chamber or region with heatable refractory elements, characterised by the feature that simulated flame-effect means or other visual effect means are located rearwardly and/or at the sides of the combustion chamber or region; and an electrically energisable light source included as part of said simulated flame-effect means or other visual effect means or being for illuminating such.
2. A fire appliance as claimed in claim 1, in which at least for protecting the simulated flame-effect or other visual effect means such is heat resistant and/or a heat resistant glass screen or panel is provided interposed between the combustion chamber and the simulated flame-effect or other visual effect means, and/or air displacement means, such as a fan are provided for creating or enabling a flow of cooling air rearwardly and/or laterally of the gas combustion means.
3. A gas-fired heating appliance, such as a gas fire, including at least one gas burner, simulated fuel means and/or other radiant elements of refractory material heatable by the burning gas of said gas burner to produce a "glowing" effect, characterised by the feature that simulated flame-effect means or other visual effect means including or being illuminatable by an electrically energisable light source, is or are located at least rearwardly of the simulated fuel or other visual effect means, and at least one upwardly extending transparent and/or translucent screen or panel of heat resistant material is located between the heatable simulated fuel means or other radiant elements and the simulated flame-effect means or other visual effect means.

4. An appliance as claimed in claim 2 or 3, in which the heat resistant screen is formed of glass such as to withstand the effects of the temperature of the gas flames of the burner and the heat of the simulated fuel means.
5. An appliance as claimed in claim 4, in which the glass is ceramic glass.
6. An appliance as claimed in which the screen is partially or completely coloured and/or patterned or marked to enhance the visual effects.
7. An appliance as claimed in any of claims 2 to 6, in which for additional heat insulation or cooling effect of the flame effect or other means and/or to improve the efficiency of the fire, air-flow creating or enabling means are provided for cooling the rear surface of the screen such as a fan or blower means which produces an air-flow and at least the rear surface of the screen.
8. An appliance as claimed in claim 7, in which said fan also operates to activate the simulated flame-effect means when of an air driven type - such as a ribbon or slit sheet type device.
9. An appliance as claimed in any of claims 2 to 8, in which an additional thermally resistant and insulating sheet, such as a ceramic insulating sheet, is interposed in a lower front region of said glass screen adjacent the, in use, glowing simulated fuel effect means.
10. An appliance as claimed in claim 9, in which said insulating sheet has suitable apertures, such as slits, to enable light to pass therethrough and into the region of the simulating fuel-effect means from an electrical light source also included in the appliance to provide an attractive "glow" in the region of the simulated fuel means.

11. An appliance as claimed in claim 10, in which said "glow" effect is provided at least when the gas fire is turned off.
12. An appliance as claimed in any of claims 2 to 11, in which the heat resistant transparent/translucent glass screen is flat or curved or a combination of such.
13. An appliance as claimed in any of claims 2 to 12, in which a second upwardly extending transparent and/or translucent screen is provided rearwardly of the first heat resistant screen, to provide additional thermal insulation between the gas burner and/or heatable simulated fuel-effect means in the combustion region.
14. An appliance as claimed in claim 13, in which the second screen is formed of a bora silica glass.
15. An appliance as claimed in claim 14, in which the glass is formed of bora silica or different material.
16. An appliance as claimed in claim 13, 14 or 15, in which the second screen is appropriately coloured or patterned or marked to provide an attractive effect.
17. An appliance as claimed in any of claims 13 to 16, in which the second screen is spaced from the first front heat resistant screen so as to provide an air space therewith for cooling/insulation effect.
18. An appliance as claimed in any of claims 13 to 17, in which the second screen is similarly shaped as the first screen and parallelly disposed relative thereto.

19. An appliance as claimed in claim 17, in which said air space is connected to or communicate with a cool air inlet provided in a lower region of the appliance and is connected to or communicate with an outlet in an upper region of the appliance leading to the interior of the room in which the appliance is to be located.
20. An appliance as claimed in claim 19, in which air may flow through the passage provided by said space and the inlet and outlet passages, and such air flow is aided by additional air displacement means, such as a fan or blower.
21. An appliance as claimed in claim 20, in which the air displacement means also acts to produce an air flow which provides requisite movement in the flame-effect means when such is of a type requiring such air flow.
22. An appliance as claimed in any of claims 2 to 21, in which the exhaust/chimney vent part of the appliance for the outflow of combustion products of the gas fire to a flue or chimney has heat-exchanger means such that the air in said passage communicating with the space behind the glass screen and/or at least between the two upwardly extending glass screens when provided (as claimed in at least claim 13) is further heated.
23. An appliance as claimed in any of claims 1 to 22, in which the electrically illuminated, simulated flame-effect means include suspended slit ribbons or a suspended slit steel or other supported fabric material to be moved by air from a fan or blower to produce the effect of flames when illuminated or lit.
24. An appliance as claimed in any of claims 1 to 22, in which flame-effect means comprise known means such as an electric lamp with flicker effect or the visual effect means comprises a "spinner" i.e. a rotary wheel with blades

horizontally mounted above an electric bulb to be driven by convection currents from the bulb to produce shadows and light on a surface or screen.

25. An appliance as claimed in any of claims 1 to 23, in which the other visual effect means comprise a vacuum chamber electric discharge device (plasma lamp type device), or differently coloured immiscible oils (lava oil lamp) or fibre-optic lights or a hologram-forming device or an upwardly extending fabric tube device and displacing fan and lit by a lamp or a light projecting device.

26. An appliance as claimed in any of claims 2 to 25, in which suitable reflective surfaces and/or mirrors and colouring are used to enhance the effects.

27. An appliance as claimed in any of claims 1 to 26, in which a suitable light source or sources are provided as part of or to at least illuminate/light the simulated flame-effect means or other means, when provided and also to provide a "glow" effect through the simulated fuel-effect means when the appliance is viewed from the front.

28. An appliance as claimed in any of claims 1 to 27, in which the rear screen or one or both screens are tinted or needled or otherwise coloured or marked to improve the aesthetic effect.

29. An appliance as claimed in any of claims 1 to 28, in which at least an additional glass or plastics sheet is provided which is reflective or mirrored or acts as a diffuser to produce a desired visual effect.

30. An appliance as claimed in any of claims 1 to 29, in which the light source is positioned such as to illuminate or back light the flame-effect part of the flame-effect means and also parts of the heatable fuel-effect means.

31. An appliance as claimed in any of claims 1 to 30, in which a switch means for the electric power supply to the light source (e.g. a light bulb or lamp) is included in or combined with the gas fire control means such that the light is automatically switched on when the control means is moved to the gas ignition position.

32. An appliance as claimed in any of claims 1 to 31, in which switch means are provided to enable the light to be switched on even if the appliance is not on the gas fire ignition mode.

33. An appliance as claimed in claims 31 or 32, in which the light switch is such that the light is switched off or reduced in intensity when the control for gas burner is at a higher gas flame setting.

34. A gas fire appliance as claimed in any of claims 1 to 33, in which to improve the efficiency of the fire, a further glass screen may be located in front of the burner and heatable fuel-effect members to close the front of the combustion region in known manner.

35. An gas fire appliance substantially as herein described with reference to the accompanying drawings.

36. A gas-fired heating appliance including simulated flame-effect means and means for electrically illuminating said flame-effect means.

37. An appliance as claimed in claims 2 and 36.

Amendments to the claims have been filed as follows

1. A gas fired heating appliance including a combustion region, at least one generally horizontally extending gas burner at the bottom of said region, and heatable simulated fuel means or other refractory radiant elements above said burner and heatable by the combustion of gas from said gas burner, characterised by the feature that the combustion region is defined rearwardly and/or laterally by at least one upwardly extending transparent or translucent heat resistant screen or panel or at least one such screen or panel with both transparent and translucent portions, and that simulated flame-effect means or other visual effect means are located rearwardly of and/or at the sides of the combustion region and on the side of the screen or panel remote from the gas burner; and an electrically energisable light source is included as part of said simulated flame-effect means or other visual effect means or being provided for illuminating such.
2. An appliance as claimed in claim 1, in which at least for protecting the simulated flame-effect or other visual effect means against the effect of heat from the gas burner, such flame effect or other means is heat resistant.
3. An appliance as claimed in claim 1 or 2, in which at least for protecting the simulated flame-effect or other visual effect means against the effect of heat from the gas burner, the heat resistant screen or panel is heat resistant glass.
4. An appliance as claimed in claim 1, 2 or 3, in which air displacement means are provided for creating or enabling a flow of cooling air rearwardly and/or laterally and outwardly of the screen or panel or rearwardly and/or laterally and outwardly of that part of the screen or panel most adjacent the gas burner.

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5. A gas-fired heating appliance, including at least one gas burner, simulated fuel means or other radiant elements of refractory material which may glow when heated by the burning gas of said gas burner, characterised by the feature that simulated flame-effect means or other visual effect means, including or being illuminatable by an electrically energisable light source, is or are located at least rearwardly of the simulated fuel or other visual effect means, or is or are located at least at the sides of the simulated fuel or other visual effect means, or are located rearwardly of and at the sides of the simulated fuel or other visual effect means, and there is provided at least one upwardly extending transparent or translucent screen or panel of heat resistant material or at least one such screen or panel with transparent and translucent portions, located between the heatable simulated fuel means or other radiant elements and the simulated flame-effect means or other visual effect means.

6. An appliance as claimed in which the screen is partially or completely coloured and/or patterned or marked to enhance the visual effects.

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7. An appliance as claimed in any of claims 1 to 6, in which for additional heat insulation or cooling effect of the flame effect or other visual effect means and/or to improve the efficiency of the fire, air-flow creating or enabling means is provided for causing cooling of the rear surface of the screen and which means is operable to produce an air-flow at least over the rear surface of the screen.
8. An appliance as claimed in claim 7, in which said fan also operates to activate the simulated flame-effect means when of an air driven type.
9. An appliance as claimed in any of claims 2 to 8, in which an additional thermally resistant and insulating sheet, is interposed in a front region of said glass screen adjacent the refractory elements or the simulated fuel effect means.
10. An appliance as claimed in claim 9, in which said insulating sheet has suitable apertures, such as slits, to enable light to pass therethrough and into the region of the simulating fuel-effect means from an electrical light source also included in the appliance to be visible from the front of the appliance in the region of the simulated fuel means.
11. An appliance as claimed in claim 10, which is operable such that said light source may be energised at least when the gas burner is turned off.
12. An appliance as claimed in any of claims 2 to 11, in which the heat resistant transparent and/or translucent glass screen is flat or curved or a combination of such.

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29. An appliance as claimed in any of claims 1 to 28, in which at least an additional screen or panel is provided which is reflective or mirrored or acts as a diffuser to produce a desired visual effect and is located behind the said first mentioned screen or panel on the side remote from the combustion region.

30. An appliance as claimed in any of claims 1 to 29, in which the light source is positioned such as to illuminate or back light the flame-effect part of the flame-effect means and also parts of the heatable refractory elements or the simulated fuel-effect means.

31. An appliance as claimed in any of claims 1 to 30, in which a switch means for the electric power supply to the light source is included in or combined with the gas fire control means such that the light is automatically switched on when the control means is moved to the fire gas ignition position.

32. An appliance as claimed in any of claims 1 to 31, in which switch means are provided to enable the light to be switched on even if the appliance is not on the gas fire ignition mode.

33. An appliance as claimed in claims 31 or 32, in which the light switch is such that the light is switched off or reduced in intensity when the control for gas burner is at a higher gas flame setting

34. A gas fire appliance as claimed in any of claims 1 to 33, in which to improve the efficiency of the fire, a further glass screen may be located in front of the burner and heatable fuel-effect members to close the front of the combustion region in known manner.

35. An gas fire appliance substantially as herein described with reference to the accompanying drawings.



Application No: GB 0003004.9  
Claims searched: 1-35

Examiner: Nigel Hanley  
Date of search: 15 June 2000

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): F4W(W57, W46A+B);

Int Cl (Ed.7): F24C 3/00, 7/00

Other: ONLINE: WPI, EPODOC, JAPIO

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2397582 GAZCO - Note use of ribbons and fans and electrical illumination of drum and flicker device (Fig 1).	1,23,24, 27-29,36
X	GB 2326227 MILES - Note use of reflective screens and flicker devices	1,24,28,29, 36
X	GB 2325733 BURLEY - Note use of material sheet, fan, electric light and use of reflectors to reflect light onto rear of screen.	1,23,27-29, 36
X	GB 2321700 McPHERSON - Note arrangement of device in Fig 4 and use with a gas element (page 1 Lines 12-13)	1,24,25, 27-29,36
X	GB 2302172 CROSSLEE - Note particularly the arrangement of the ribbon in an airflow behind a screen and Page 6 lines 32-35 which allow for the use of gas burners	1,23, 27-29,36
X	GB 2275105 BASIC - Note arrangement of material flame and lights behind series of screens and Page 1 paragraph 1	1,23, 27-29,36

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|---|---|
| X Document indicating lack of novelty or inventive step   | A Document indicating technological background and/or state of the art  |
| Y Document indicating lack of inventive step if combined with one or more other documents of same category. | P Document published on or after the declared priority date but before the filing date of this invention          |
| & Member of the same patent family  | Z Patent document published on or after, but with priority date earlier than, the filing date of this application |



Application No: GB 0003004.9  
Claims searched: 1-35

Examiner: Nigel Hanley  
Date of search: 15 June 2000

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2217832 GLOWWORM - Note use of heat exchanger at rear of fire and cooling effect of fan on electric lighting source	
X	GB 2134649 THORN EMI -Note use of electrically operated flame effect above a gas burner	36
X	GB 1164144 BERRY - Note use of electrically operated flame effect panel in gas fire	36

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